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The Fourth Factor in Cost Accounting

BY GORDON WILSON

It has become almost a matter of instinct, in planning cost accounts, to base the work on the three traditional fundamentals, labor, material and overhead. This is quite sufficient in a great many lines of business, and particularly in the case of industries in which costs can be based on the process method. Here, where the labor and the overhead are applied to the material in the mass, so long as a satisfactory standard of operating practice is maintained, no particular concern need be given to the fate of any individual particle of material. A given quantity of raw material is put into process and, under normal operating conditions, the expected quantity of product is turned out. The cost accountant cannot tell the operating man how he can get more product per unit of raw material—he can only compile the cost accounts for purely accounting purposes and analyze the items of labor and overhead in such a way as to indicate whether the proper standards of economy and efficiency are being maintained. In a great many manufacturing lines, however, there is a fourth factor in the manufacturing cost, which must be considered if the cost accountant is going to do his full duty by the manufacturing end of the organization, and that is *spoilage*.

Cost accounting has two important functions to perform. For balance sheet purposes it must tell, as accurately as possible, the manufacturing cost of merchandise sold and on hand. The cost accounting that stops here, though, is not cost accounting. It is just bookkeeping. The real cost accountant must go much further. He must make his work of positive, productive value by showing why and how the finished product cost what it did.

It is not sufficient to charge to the cost of manufacture everything legitimately chargeable thereto; the charges must be analyzed, item by item and step by step, so that the manufacturing management may take the analyses and see where operations and processes are costing more than they should, note the cost of operations that may be dispensed with or replaced by less costly methods, and benefit, in general, by the application to the details of their operations of the same dollars and cents test by which they and their work must be judged in the long run. In short, the cost accounts must not merely record costs; they must also contribute directly toward the lowering of future costs. Forgings, castings and bar stock are enormously expensive today, and each hour of labor that is applied to them adds to their cost and to the potential drain on the profits of the manufacturer, should they be spoiled while in process of manufacture. Volumes have been written on the distribution of manufacturing overhead, although the overhead, however applied, must all come out of profit and loss eventually. Spoilage, on the other hand, is absolute loss and waste; and it is the duty of the cost accountant to show it up at its full cost, and to indicate where and how it occurred, so that the operating end of the organization may not only see the trouble in its full dimensions but also take steps toward its elimination.

It is understood, of course, that spoilage frequently is not considered or treated as a separate cost element. It is charged direct to profit and loss; it is treated as a part of the overhead—and sometimes it is gently but firmly ignored. There are certain arguments in favor of the first two methods; but there are other and better arguments against them. In the first place, spoilage, when presented as a lump figure, is likely to be accepted as a necessary evil. The problem is not attacked because, from its utter shapelessness, it offers no point of attack. Again, spoilage figures so presented are rarely complete. There is a tendency to limit them to the bare cost of the raw material, overlooking the fact that much costly labor with its attendant overhead, and many hours of valuable productive capacity may have been lavished on the piece before it was spoiled. A forging may pass through the entire process of machining, only to be rejected on final inspection as unfit for assembly. Its cost is the cost of a

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highly-finished, merchantable article, but its value depends only on its weight and the market price of scrap. The labor and overhead have been spoiled and wasted, as well as the raw material, and any figures pretending to reflect the spoilage loss must take cognizance of this fact. Therefore, the spoilage cost of a job must be calculated simultaneously with the rest of the cost; so the logical and convenient thing to do is to embody it in the completed cost analysis.

It may be said that to do this will have the effect of charging into inventory a loss chargeable to the profits of the period in which it was actually sustained; but it can be demonstrated that spoilage, when incurred, is actually a legitimate part of the cost of manufacture; and as such may justly be carried through inventory into the cost of sales. It is inconceivable in the first place that a manufacturing concern should operate without spoilage. Therefore, a certain amount of spoilage may be accepted as a part of the regular routine of a manufacturing process; and the cost of the spoilage must be recognized as a part of the regular cost of manufacture. Incidentally, it is equally entitled, with the other factors entering into manufacturing cost, to be so analyzed and set forth that it can be measured, controlled and, if possible, reduced. If a certain percentage of spoilage is necessarily incidental to the manufacture of an article, the spoilage is just as much an element of the cost of that article as the material, the labor or the overhead. If an excess of either labor or material were used in the production of the article in question, no one would think of charging the excess elsewhere than to the manufacturing cost. If this were not done, a bogey manufacturing cost might be laid out in advance, and the excess labor and material charges disposed of elsewhere as they were noted. This would not be constructive cost accounting, however—neither is it good cost accounting to charge spoilage, which simply represents a combination of wasted labor, material and overhead, elsewhere than to the manufacturing cost of the finished article to whose production it was incidental. The really valuable cost analysis tells the whole history of the process under review. It records and measures the bad luck and bad management incidental to the production of the finished article; and whether the bad luck manifests itself as wasted labor, wasted material or

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wasted productive capacity, that bad luck is a part of the final manufacturing cost.

Very little can or need be said here regarding details of methods of handling spoilage in the cost accounts. Cost systems and the conditions which they must cover are so widely different that it would be a waste of time and a possible cause of confusion to go beyond generalities. It might be said, however, that even where shop order cost systems have been simplified to the point of crudity, provision should be made for recording, in the case of each job:

1. The number of units spoiled in process and their approximate cost up to the point of spoilage.
2. The scrap or salvage value of these units, and
3. The expense of correcting parts not hopelessly spoiled in manufacture, but which must undergo special treatment, in addition to the regular manufacturing operations or processes, before they can be used.

In the case of jobs covering the manufacture of parts, the difference between items 1 and 2 should be shown as a separate item, under the heading "spoilage," on the cost sheet, and the spoilage cost per unit of properly finished product should be shown. Item 3 may be included in the spoilage group, or shown as a separate item in the labor analysis, as circumstances may indicate. The degree of accuracy attained in valuing parts spoiled in process will depend, of course, on the degree of refinement to which the costs are worked out. Where labor and overhead charges are analyzed on a departmental, machine or operation basis, this work can be done very satisfactorily. Needless to say, the parts spoiled during each step in the process of manufacture should be stopped there, as far as the cost sheets are concerned, and the unit costs of labor and overhead on subsequent steps based only on the number of parts, still unspoiled, which are carried into them.

In assembly jobs item 1 should include all parts not accounted for and all damaged parts, regardless of whether the latter will be repaired and taken back into stock or not. Item 2 will include the scrap value of destroyed parts and the stock value of repaired

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parts; while item 3 will logically appear as a deduction from item 2, in order to show the net salvage credit.

And now, as always, we must answer the practical man, the man who insists on asking "What's the use?" He will surely admit that spoilage is the most controllable factor entering into the cost of manufacturing an article, that it represents the most inexcusable drain on manufacturing profits, and that it is the one thing that everybody, from the workman up, is always tempted to hide or ignore. Frequently, spoilage is successfully hidden from superintendents and factory managers who would be keenly and actively interested in it if it came to their attention. The one unfailing way to see spoilage is through the eyes of the accounting department, which can gauge its exact extent by the cold logic of comparing the number of rough parts going into the factory with the number of finished parts coming out. Only the accounting department can measure the total loss that is sustained. A dozen parts spoiled in different stages of machining may not look so very different to the eye which instinctively appraises them all as junk; but it may be some of those parts have been spoiled after passing through an operation which has caused a substantial increase in their cost—an increase that might warrant a change in men, methods or equipment if the accumulated spoilage at that point were known and tabulated.

Complete figures on spoilage will frequently tell whether cheap raw materials are the most economical. We know, for instance, of one manufacturer who had it all figured out, to his own satisfaction, that it would pay to use thirteen cheap low-grade aluminum castings and lose three of them in manufacturing, rather than pay more for a higher grade of casting. He had made his calculations very carefully and had included an allowance for the scrap value of the spoiled castings and an average labor loss on each casting that was scrapped. When he checked his estimate against his cost analysis he found, however, that most of the fatal blow holes did not develop until the castings had passed through several rather costly machining operations, thereby upsetting his calculations on the average labor loss; and furthermore, that the overhead in the department where these preliminary operations were performed was so high that he could not afford to waste his time on the cheap castings.